Commentary

On ''On Education and Geographers: The Role of Cognitive Developmental Theory in Geographic Education'' by Roger M. Downs, Lynn S. Liben, and Debra G. Daggs

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Beyond question, Roger Downs and his colleagues, Lynn S. Liben and Debra G. Daggs, have opened up an exciting new interdisciplinary terrain (1988). In reviewing previous work at the interface of developmental psychology and geographic education, they point up the various ways in which these disciplinary perspectives can inform one another. And in encapsulating their own pioneering studies, they help to indicate the likely lines in which "developmental geography" may proceed in the coming decade.

Jean Piaget is the most important student of cognitive development in this century. As such, he is an entirely appropriate figure around whom to construct a synoptic account. Indeed, to the extent that cognitive-developmental psychology is not widely known to geographic educators, an introduction to Piaget is necessary and almost entirely salutary. Yet, in the years since his pathbreaking work has become known among his fellow scientists, many of Piaget's chief claims and theoretical constructions have been strongly challenged. I indicate here some of the most nagging problems in the Piagetian synthesis, as a way of indicating how "developmental geography" itself might avoid certain Piagetian cul-de-sacs.

Piaget strove to provide a portrait of development which could apply to every normal human being throughout the world. As David Feldman (1980) has put it, Piaget outlined "universal development." Much of development, however, takes place with respect to domains that have been formulated within one or more cultures during recorded history. I claim that geography as a domain, and certainly maps as symbol systems, are representatives of domains which are cultural rather than universal.

It remains an open question whether a Piagetian scheme is adequate to account for geographic knowledge. According to my own analytic scheme (Gardner 1990), individuals are capable of at least four separate ways of knowing the domains in their culture. Two of them—through sensorimotor exploration and through "first order" symbols (like words and representationally-faithful pictures)—are available to all humans; these aspects of "developmental geography" would presumably be universal. But two other forms of knowledge—understanding of notations (like maps) and understanding of concepts and theories (such as different forms of spatial projection) are distinctly non-universal. I would urge that the authors examine the developmental trajectories of these various forms of knowing; and I anticipate that they will arrive at a developmental portrait more complex than the one which they present here.

A developmental study properly begins with an examination of how students' understanding evolves in the absence of targeted instruction. Targeted learning is best understood against a background of "natural development." Once such a portrait has been achieved, however, it becomes important to analyze the effects of different forms of instruction or enrichment as well as different cultural instantiations of maps. This point has been made most forcefully by the Soviet psychologist Lev Vygotsky (1978) but is now being echoed throughout the area of cognitive development (Cole and Cole 1989). I recommend that Downs et al. complement their developmental investigations with a direct examination of the role of different kinds of tutelage in students' understandings of a spectrum of maps and geographical concepts.

A final point addresses method. Like Piaget's work, the studies cited by the authors rely heavily on interviews. Much can be gained from

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direct questioning of subjects, and psychologists have sometimes foolishly rejected this source of information. Yet, being able to speak about knowledge and having that knowledge available in a "practical way" are not always equivalent. I suggest that Downs et al. adopt some of the ingenious experimental methods which they and other developmental psychologists have employed in other domains in order to provide us with a sharper picture of children's competences and deficits in the realms of geographical knowledge.

These various suggestions will not come as a surprise to the authors. They are themselves informed of recent trends in cognitive-developmental studies and even allude to some of the above points in their essay. My comments reflect a difference in accent, not a fundamental divergence in approach. I urge them to step out a bit from behind Piaget's admittedly daunting shadow and create a "developmental trajectory" as broad as the field of cognitive development itself has become.

References

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Reply: Surveying the Landscape of Developmental Geography: A Dialogue with Howard Gardner

In his Commentary, Howard Gardner asks: "what is the essential nature of becoming a geographer?" As members of a discipline, we have pursued the question of what it means to *be* a geographer and *do* geography almost to the exclusion of understanding the process of *becoming* one.

The question of "becoming" is the same one that Carl Sauer (1956) posed for the discipline more than 30 years ago and that Pierce Lewis (1985) recently restated. Sauer's assessment of the roles of "original bent and early predilection" and Lewis's discussion of cartophilia, the "visceral love of maps," and topophilia, the "passion for the earth," may well describe why some people become geographers. No matter how often and how eloquently the question is raised in A.A.G. Presidential Addresses, we seem incapable of responding in other than an introspective manner.

Thus, despite sporadic forays on ceremonial occasions, the process of becoming a geographer remains mysterious (although we are beginning to see attempts to penetrate the mystery, see Kenzer 1989; Gaile and Willmott 1989). As a consequence of this relative neglect, geographers have little systematic understanding of the development of expertise in geography and therefore are ill-equipped to contribute to the interdisciplinary exploration of "developmental geography."

In his concern for the baseline of "natural development" and with the "developmental trajectory" of developmental geography, Gardner poses the question about becoming a geographer in a way that may suggest more satisfying answers, ones that make use of developmental psychology. To do so, Gardner distinguishes between *universals* and *non-universals* in the development of knowledge.

His commentary goads, if not defies geographers to consider the forces sculpting the landscape of developmental geography. Using the universal-non-universal dimension, we will explore the domains of geography and cognitive development, and link these two perspectives in the context of geographic education. We will raise questions that must be considered if geographers are to offer the "sound geographic education" called for by the *Guidelines for Geographic Education* (Natoli et al. 1984).